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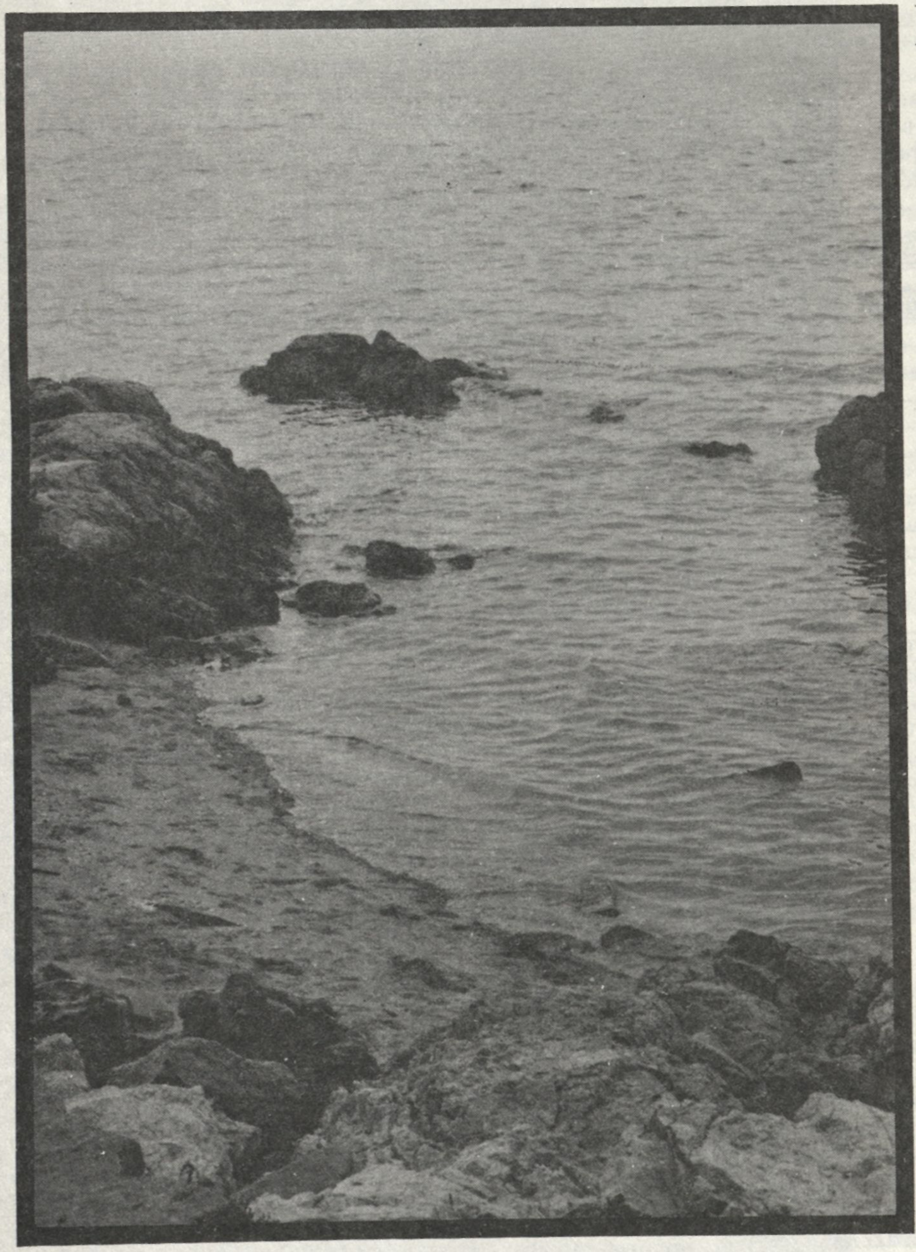

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The Wider View

The Value of Clean Air

By John Gove,
Principal Air Pollution Control Engineer,
Air Compliance Unit

Recent serious efforts to control air pollution nationally began in 1967 with the passage of the Clean Air Act. Amendments which strengthened controls were passed in 1970 and 1977. In Connecticut, air pollution control (smoke abatement) began in the early 1960s and was enforced by the state Department of Health and local health agencies. With the passage of Public Act 872 in 1971, responsibility was transferred to DEP, where it now resides.

The 1970 amendment to the Act put teeth into the law for the first time by directing EPA to adopt standards for major pollutants and by directing the states to achieve those standards. In Connecticut, the Air Compliance Unit of DEP has been delegated this responsibility. The unit is divided into three sections -- Technical Services (under Robert A. Rubino), Monitoring (under Joseph C. Magyar), and Field Operations (under Gudmun S. Lovvoll).

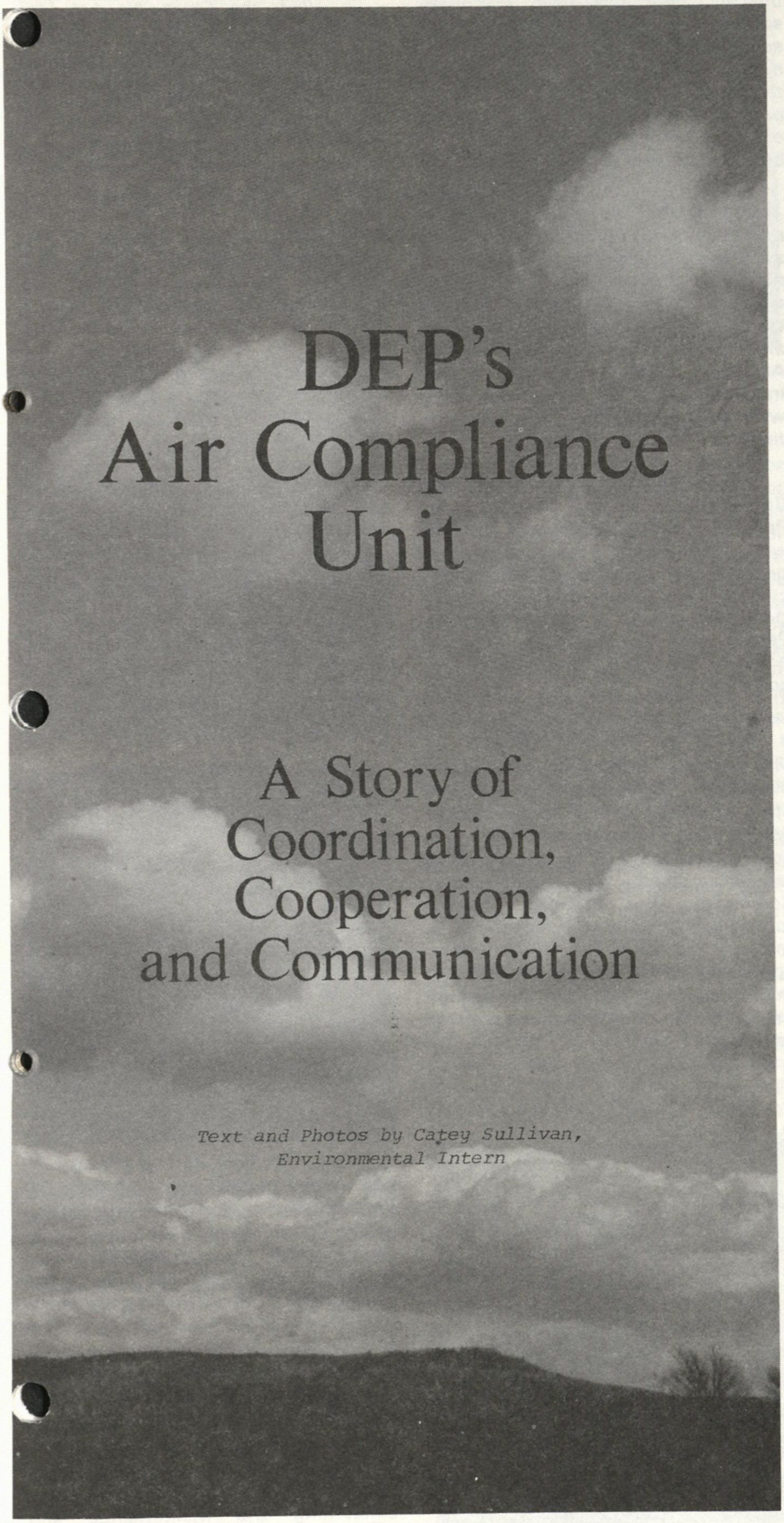
In Technical Services, alternative strategies are studied, programs are developed, and analyses are done of the impacts of various programs and pollution sources on air quality.

The Monitoring Section operates a network of air sampling stations which record the concentrations of the major pollutants and allow the unit to track its progress in achieving clean air goals.

Field Operations investigates complaints and inspects factories and other sources to make sure the regulations limiting air pollution are being complied with. This section also evaluates applications for new emissions sources.

The purpose of all this activity is to protect human health and property by lowering air pollution. Pollution has serious impacts on all of us. Many Connecticut residents suffer from respiratory ailments and cannot participate in normal activities when air pollution levels are too high. During the summer, unhealthful smog levels are reached on an average of one out of every four days. Air pollution also costs money; it causes material damage, crop loss, and lost time from work due to sickness.

DEP has made great strides in reducing air pollution since its inception. Particulate matter has been reduced by 23 percent (over 12,000 tons per year -- TPY), mainly by requiring pollution control on smokestacks and by restricting open burning of leaves and brush. Sulfur dioxide has been reduced by over 70 percent (almost 240,000 TPY), by limiting the sulfur content of fuel. Carbon monoxide, nitrogen oxides, and hydrocarbons are controlled by strict federal standards for new cars and the state's emissions testing program. These pollutants have been reduced by 460,000 TPY. ■



DEP's Air Compliance Unit

A Story of Coordination, Cooperation, and Communication

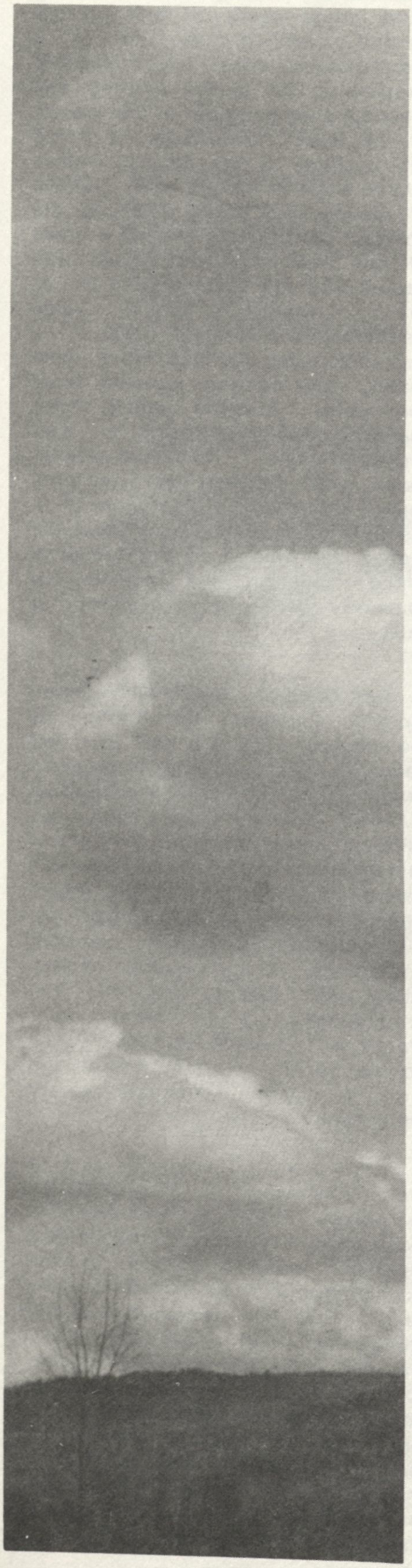
Text and Photos by Catey Sullivan, Environmental Intern

The Inspection Process

The bag house, a windowless, box-like structure the size of a tool shed, stood about 30 feet off the ground, perched on top of a metal-runged ladder. Jack Doolittle climbed up the ladder, entered, and stepped over a motor in the center of the floor. Cautiously, he noted the position of the motor's cables which, when in motion, were capable of cutting into a leg down to the bone. Then Doolittle slipped a panel of the wall from its hinges and peered into the space behind it. At the mouth of this closet-within-a-closet was a two-foot layer of fine, black dust. Heavy, soot-colored curtains lined the walls. Doolittle shook these curtains, which were in fact industrial-sized vacuum-cleaner bags, and watched for escaping dust. There was a great deal of it. Doolittle then climbed back down the ladder, and walked to the foundry's office, checking the ground for unusually large accumulations of dust.

Jack Doolittle, Senior Air Pollution Control Engineer for DEP's Air Compliance Unit, will tell you that there are many elements involved in conducting a thorough inspection of a steel foundry; the baghouses (storage spaces for large amounts of factory-generated dust) are only a part of the overall inspection. Many other areas must be questioned: Are the scrubbers and fans running smoothly? Is the flooded elbow doing its job? How do the after-burners look? What color smoke is the stack emitting? How do the boilers appear? Are all the workers wearing adequate safety equipment?

Within the Air Compliance Unit of the Department of Environmental Protection, there are seven field inspectors; foundry inspections represent only a portion of the assignments carried out on a daily basis. The ACU responds to 800 complaints and inspects 1100 factories, foundries, and other sources of air pollution annually. Acute peripheral vision is a must for air compliance inspectors; they use their "road time" -- the time spent driving from one inspection site to the next -- to spot-check the atmosphere for smoke of suspicious



opacity. Emissions from stationary sources, emissions from mobile sources, complaints of objectionable odors, high levels of sulfur oxides, oxides of nitrogen, hydrocarbons, particulates, lead, and "smog" are all elements of air pollution which must be monitored by the ACU.

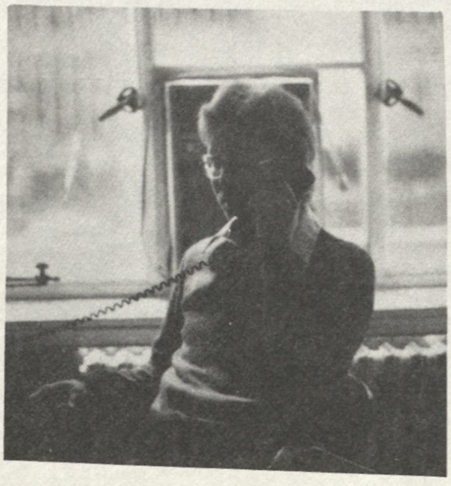
The air quality regulations maintained by ACU inspectors are stringent. Regulations concerning nitrous oxides, sulfur oxides, carbon monoxides, particulates, and Volatile Organic Compounds were modeled after similar regulations used in Los Angeles. The penalties that industries face for non-compliance with ACU regulations are stiff -- fines can reach up to $25,000.

Dennis Demchak, one of the Air Compliance Unit's Senior Air Pollution Control Engineers, explains why Connecticut standards have become so stringent: "Connecticut citizens are well-educated," says Demchak, "and fairly affluent. People saw the problem with air pollution 10 or 12 years ago and acted on it."

The State Implementation Plan

The methods used to meet federal clean air requirements differ from state to state. James Royce, Senior Air Pollution Engineer, said that while some states have only guidelines to regulate clean air requirements, Connecticut has statutes. Royce further indicated that Connecticut is "more up-to-date and more aggressive" in its air control methods than any other state except California. Such was not always the case.

Phil Schnell
Provisional Air Pollution Engineer



In 1967, the Clean Air Act wa passed. The Citizen's Guide Connecticut's Air Pollution Program, a publication available from the Air Compliance Unit, states that this act was "the first serious effort" to implement regulations to control and to improve air quality standards on a national level. Royce explains that prior to the Clean Air Act, air pollution control was handled by the Department of Health. There were no state regulations in effect. To industries, clean air standards were a matter of voluntary control; the state's right to issue penalties did not exist. Also not in existence prior to 1967 were uniform standards fo the maximum amounts of major pollutants allowed in the air.

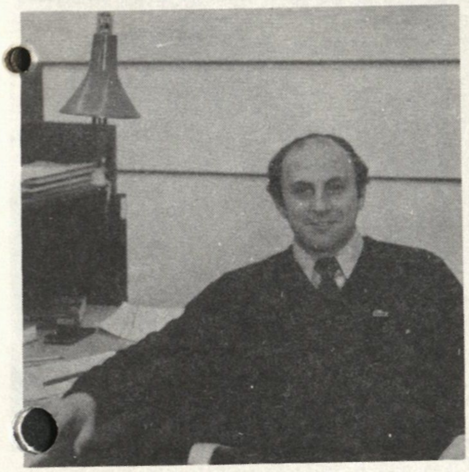
The Citizen's Guide states that a 1970 Ammendment to the Clean Air Act "put some teeth" into the field of air quality enforcement. It was in 1970 that National Ambient Air Quality Standards (NAAQS) were adopted. States were now required to see to it that these NAAQS were realized and maintained. In 1971, this responsibility was assigned to the DEP; in 1972, DEP regulations designed to achieve NAAQS were implemented. State regulations are known as the State Implementation Plan or SIP.

Linda Yonan
Sr. Field Inspector

A host of different areas are covered within Connecticut SIP including procedures for pla inspections, emissions monitoring, permit registration, and complaint handling. Also included are regulations and instructions concerning the maintenance and proper use of air pollution control equipment and formulas for levying penalties. Connecticut SIP will prove effective. A table formulated by the ACU indicates that the level of hydrocarbons in the air will decrease by 126,166 kilograms per day in the period from 1980 to 1987.

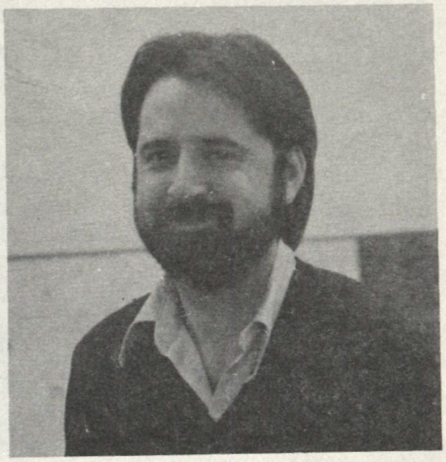
"The Front-line Guys"

Mike Ciszewski, Senior Air Pollution Control Engineer, rightfully claims that the inspectors are "the ones out there, the ones talking to the people and writing up the violations." He adds, "We have to communicate and talk to people we don't know every day, we hear the comments and complaints . . . we get our noses bent around once in a while." Bob Sargis, Principal Air Pollution Control Engineer, agrees: "These are the front-line guys." Climbing in and out of baghouses is often one of the easier duties of this job.



William Wihbey
Sr. Air Pollution
Control Engineer

For Phil Schnell, Provisional Air Pollution Engineer, the investigation of complaints has been occasionally troublesome. Responding to complaints involves about 50 percent of an inspector's daily work. While most complaints are valid, some prove to be not so. Schnell remembers being in East Hartford at five-thirty one morning to investigate a complaint lodged against "a company that washes trucks used to transport chickens."



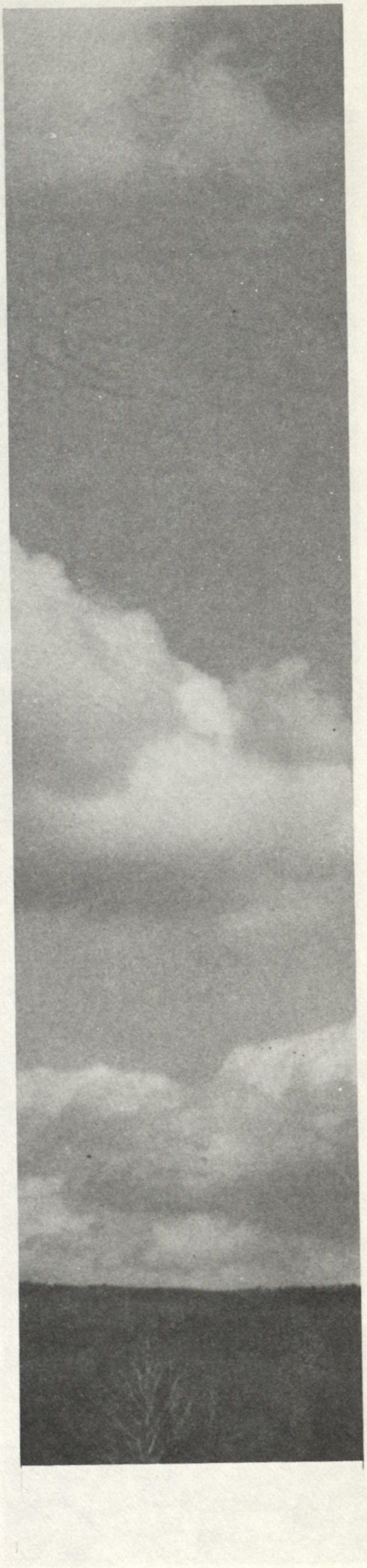
Mike Ciszewski
Sr. Air Pollution
Control Engineer

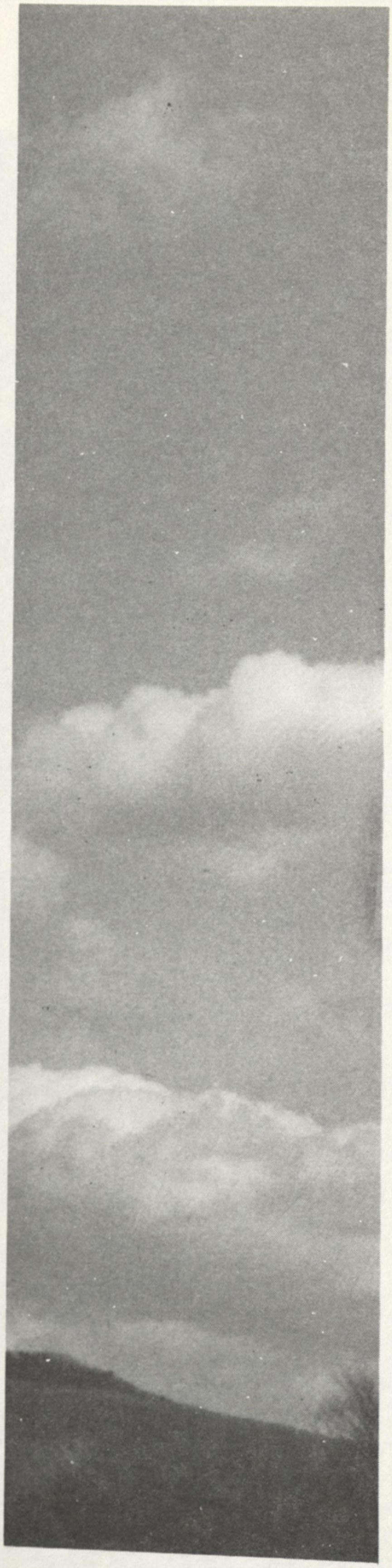
When investigating odor complaints, it is an inspector's usual procedure to visit the complainant's home for a first-hand account of the problem. After this, the inspector will canvas the surrounding areas for all possible sources of the odor. An inspector's response to an odor complaint is largely subjective. Odors must be deemed "objectionable" by the inspector before a notice of violation can be issued. Jack Doolittle claims that "the human nose has its own particular response rate for any chemical," and adds that odors must be strong enough to create a reasonable disturbance beyond the property lines of their source to warrent a notice of violation.

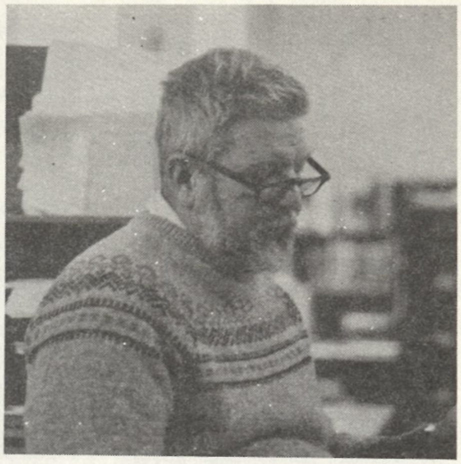
Schnell states that odor complaints are generallly seasonal; calls to the ACU concerning odors increase in the summertime and taper off in the colder months.

The opacity of a plume can vary from a relatively harmless gray to a noxious opaque-black. Plumes can be shades of white, yellow, or green. They can consist of only steam (in which case the plume will end abruptly at a definite point) or they can be filled with unhealthful particles (in which case the plume will trail off indefinitely). Inspectors must be able to accurately judge the opacity and the composition of a particular plume using only their eyes.

Smoke school is not a one-time event. Sargis explains that all inspectors, regardless of the number of years they have spent in the field, are required to take a "refresher course" every six months, and qualify as evaluators of visible emission from combustion sources given by EPA, Region I.







Jack Doolittle
Sr. Air Pollution
Control Engineer

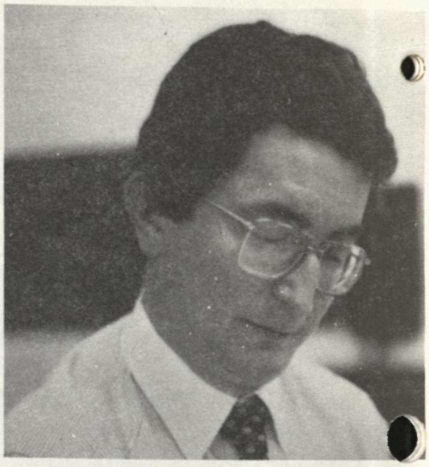
Being a Good Neighbor

Emissions into the air come from two possible sources: stationary and mobile. Stationary sources which emit 100 or more tons of smoke annually are inspected annually. Hundred-ton plants are sent pre-inspection questionnaires (PIQs). Plant engineers fill out these forms before the physical inspection takes place, providing the DEP with information concerning the plant's equipment and sources of emissions. Bill Wihbey describes ACU inspections of 100-ton sources as "evaluations of the company's information," or as an "auditing" type of procedure. Schnell states that while "polluting can be cheaper" for major sources, most factories "don't want to be hassled by the DEP; they don't like the civil penalties." He said, "Foremen don't care about the cost of compliance. They just want the problems solved." Schnell indicated that public relations is another side of the compliance issue. Besides not wishing to avoid the expense of a civil penalty, "factories like to be perceived as good neighbors."

A "good neighbor" is exactly what one 100-ton source in Milford proved to be this past February. Because of a pre-dawn boiler malfunction, this particular factory belched out a large amount of pure carbon onto the surrounding neighborhood. The fine, black carbon particles sifted through the air and covered nearly a square block of snow. It settled on many houses and changed the color of two household pets.

The plant engineer explained that the fact that this accident happened during the winter was fortunate; only one home in the affected area had a window open. Wihbey's task after the accident was to see that the neighborhood was adequately cleaned up, and to ascertain if any health hazards had resulted. The actions of this plant were exemplary.

At plant expense, the black snow was cleared. A number of cars, carpets, and draperies were cleaned and the pets were given professional shampoos. The boiler was repaired immediately. The company volunteered to cease burning fuel oil (the cause of the carbon) and instead now burns gas. There was no damage sustained in the atmosphere. It is this sort of cooperation between private industry and the DEP which allows the Air Compliance Unit to run smoothly.



Dennis Demchak
Control Engineer
Sr. Air Pollution

Schnell has encountered smaller, but far less cooperative offenders. En route from a routine compliance inspection of a hospital gas tank, Schnell sighted a plume of smoke while travelling down the highway.

"Always check on any mystery smoke," states Schnell. "See where it is coming from." This smoke was coming from a mobile source; a truck running in the center of a construction site. According to A[illegible] regulations, mobile sources are allowed to emit smoke of up to 20 percent opacity and they are allowed to reach 39 percent for a period of

10 seconds. They are at no time [illegible]wed to exceed 40 percent. Schnell evaluated this smoke to be consistently at 80 percent opacity. The foreman on the site insisted that the cold weather was causing the dense opacity, and that he had been operating for weeks without any interference.

"Basically," Schnell stated, "he was making a lot of excuses." After a notice of violation is served, violators are given a grace period to comply with regulations. Mobile sources generally receive two weeks.

The Right Direction

Connecticut has more industry per-square-foot than any other state. The seven ACU inspectors of the DEP are directly responsible for the compliance of each industry and indirectly responsible for the quality of the air above each square foot. In addition to annually inspecting more than 1100 hundred-ton sources, inspectors annually respond to roughly 800 complaints, perform 600 follow-ups, make 200 permit-compliance inspections, issue 200 notices of violation, and routinely inspect 200 filling stations. Records must be kept of every industry, filling station, and location where violations occurred Depending on the nature of [illegible]mplaint calls, the priorities of an [illegible]pector's daily work can shift without notice.

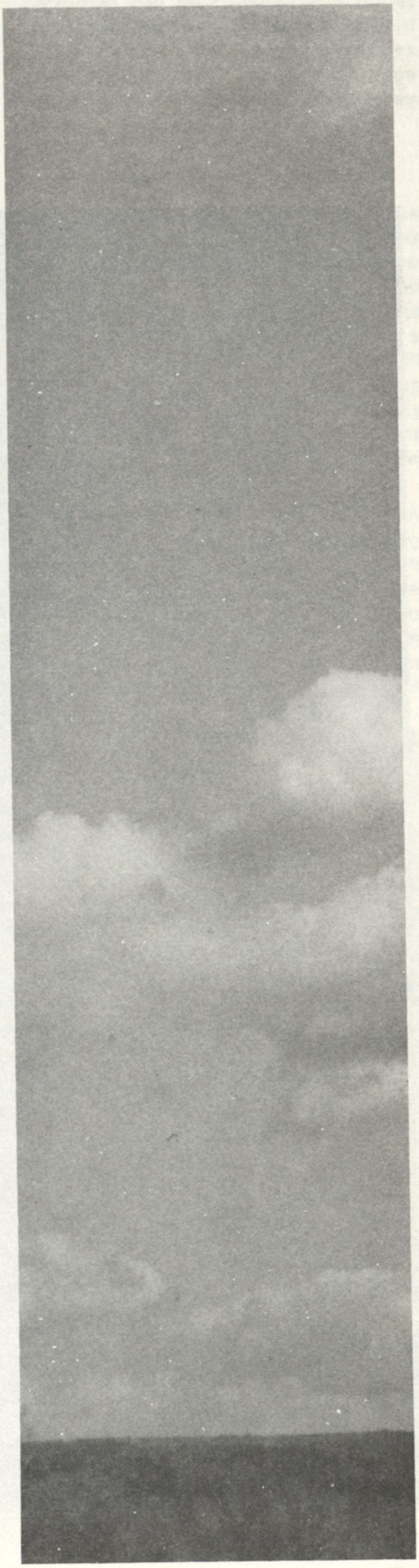
Bob Sargis
Sr. Air Pollution Control Engineer; Director of Field [illegible]erations, Enforcement Division

Many of the organizational duties which keep the enforcement section of the ACU running efficiently are handled by Steve Bilodeau, the ACU dispatcher, and by Edith Thornton, who handles most of the unit's record keeping. Bilodeau arranges the itineraries of the inspectors so that they spend a minimum of time driving from site to site. He also sees that certain inspections are held on appropriate days. It would, for example, cause problems to schedule the investigation of a dust complaint in rainy weather. Thornton maintains files of all inspections and complaints and twice daily she logs exactly where the inspectors are and what they have been doing. She assembles PIQ information for Bilodeau and keeps a grid chart of every 100-ton source in the state.

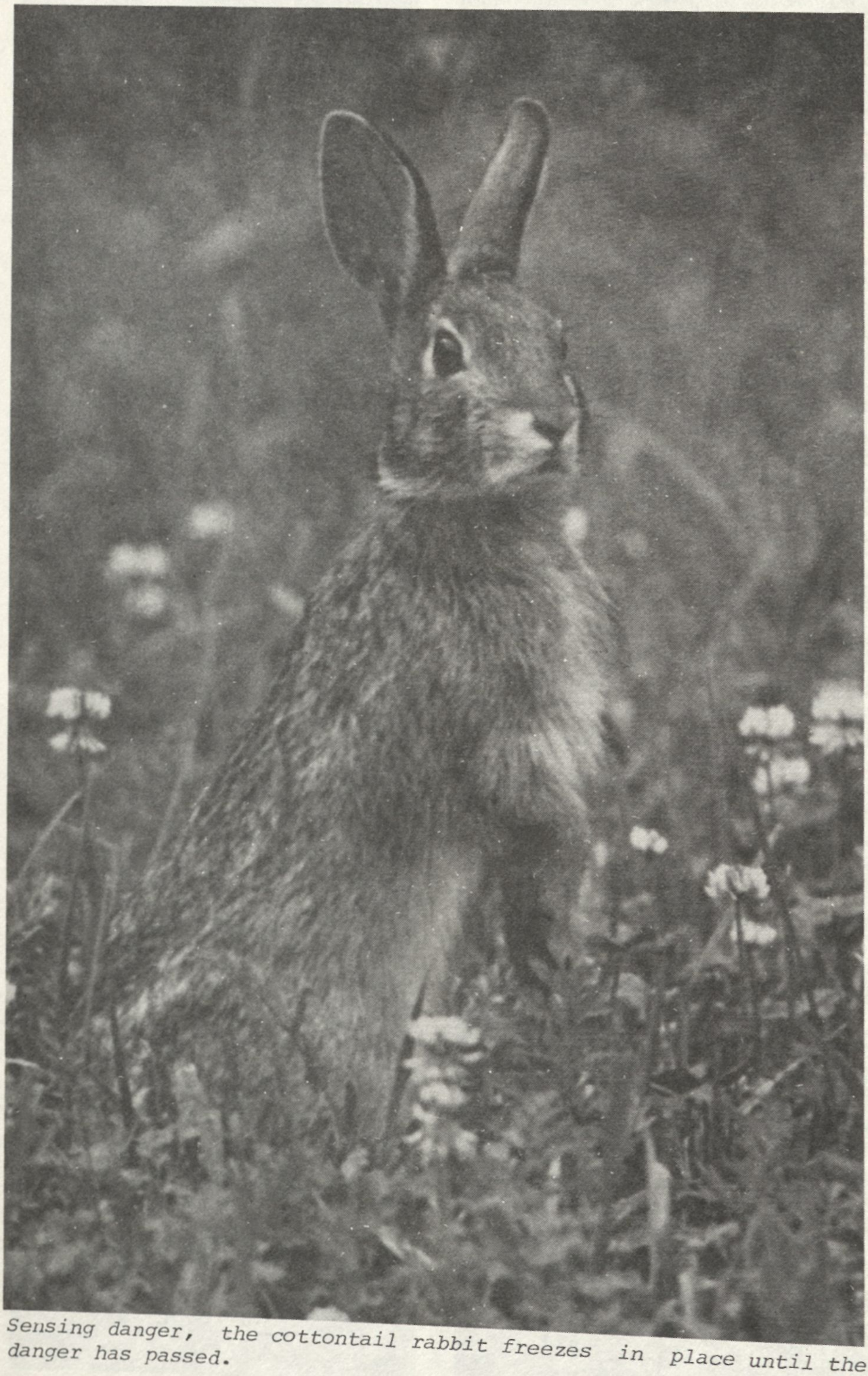
With such logistical support, it lies with the inspectors themselves to interact with the public. Jim Royce, Senior Air Pollution Control Engineer, states that ACU inspectors must deal equally well with the general public as with heads of corporations and plant engineers. Sargis feels he does not greatly exaggerate when he says, "Without enforcement in the field, there can be no Air Compliance Unit."

"Cooperation, coordination, communication and the establishment of rapport at all levels," says Bob Sargis, "are the cornerstones of the field inspection process. In 1970, you could walk down a street and see smoke spewing. You won't be as likely to see that anymore. We're going in the right direction." ■

Jim Royce
Sr. Air Pollution Control Engineer; Director of Internal Operations, Enforcement Division



DEP Wildlife Information Series



Leonard Lee Rue III photos

Sensing danger, the cottontail rabbit freezes in place until the danger has passed.

The Cottontail Rabbit in Connecticut

General

The cottontail rabbit is a somewhat stocky animal with large hind feet long ears, and a short, fluffy tail that resembles a cotton ball. Its long, coarse coat varies in color from reddish-brown to black or grayish-brown. The underparts are white. There are actually two species of cottontail rabbit in New England; they are the eastern cottontail (Sylvilagus floridanus) and the New England cottonta (Sylvilagus transitionalis). These two species are almost identical in appearance, except for a slight variation in color. A comparison of the skull characteristics is the most reliable way to distinguish the two species. The eastern cottontail is more abundant and seems to be expanding its range, while the New England cottontail's range seems to be diminishing. Both species are found throughout the lower New England states and they both have similar habits.

Biology

Cottontails are found in farmlands with open fields and meadows, areas of dense high grass, in wood thickets, along fence rows, forest edges, and the borders of marshy areas. They usually avoid dense woods. Cottontail rabbits are active all year long, foraging mainly at night. During the day they remain concealed in dense brush, protected from predators and harsh weather. In times of extreme weather conditions, rabbits will readily utilize an abandoned woodchuck burrow for protection. A rabbit's home range varies greatly with the quality of habitat, but generally averages about three acres for females and eight acres for males.

In the summer months, cottontails feed almost entirely on tender grasses and herbs, including clover, alfalfa, timothy grass, bluegrass, quack grass, crabgrass, redtop, ragweed, goldenrod, plantain chickweed, and dandelion. Crops such as peas, beans, wheat, rye, oats, lettuce, cabbage, and cornstalks are also readily eaten. In the winter, the rk, twigs, and buds of shrubs and young trees are eaten. Rabbits will also reingest their own fecal pellets, increasing their level of vitamins and minerals.

Breeding occurs from March through early fall. The gestation period is about 28 days. There are usually two to four litters per year, with about three to eight young per litter. Sexual maturity of the young is reached at two to three months and females will breed the first spring following their birth. On the average, 15 percent of the young will survive their first year. A rabbit's life span is only two years in the wild about 10 years in captivity.

Females do not dig their own nest burrows, but rather scratch out a slight depression in the ground in an area of dense grasses for concealment. The nest is lined with fur and dry grass. Young rabbits are born blind, naked, and helpless, but grow rapidly, leaving the nest after ly two to three weeks. They are weaned and totally independent at four to five weeks. Adults are usually solitary by nature except when a female is caring for its young.

Cottontails have very keen sight and hearing. When danger is sensed, the animal will usually freeze in place until the danger has passed, but they will flush readily if approached too closely. Rabbits normally move slowly in short hops or jumps, but when frightened they can achieve speeds up to 18 miles per hour over a short distance. They often zig-zag to confuse a pursuing predator. Although they don't take to the water often, rabbits are good swimmers. They will thump the ground with their hind feet regularly, probably as a means of communication. When playing, breeding, or fighting, they often make low purring, growling, or grunting sounds. If captured, the animal may produce a loud, shrill scream.

Benefits

Because of its high productivity rate, the cottontail rabbit is an important link in the food chain and principal prey item for many species. Depending on its availability, the cottontail can be considered a buffer prey species, which means that if rabbit numbers are high, predators will concentrate on them, thus reducing the pressure on other prey species.

Management of Nuisances

Cottontail rabbits often cause problems by browsing garden crops or chewing on shrubs and trees Rabbit browsing can be distinguished from deer browsing by looking at the clipped-off end. A rabbit will leave a clean, angled cut while a deer will leave a rough, jagged cut. Browsing and debarking by rabbits usually does not extend more than two and a half feet above the ground or snow line.

Cottontails can be restricted from gardens and other areas by erecting a three-foot high fence with two-by-two- inch mesh. They are not good climbers or diggers but to discourage other animals from feeding in the garden, a one-foot extension can be added to the top of

Young rabbits grow rapidly and leave the nest after two to three weeks.

the fence and bent outward at a 90-degree angle. Also, a one-foot extension should be added underground to discourage burrowing animals. Existing deer fences can be made to deter rabbits by attaching a small mesh-wire fence to the lower part of the deer fence.

Individual trees and shrubs can be protected by wrapping plastic tubing or 1/2-inch mesh wire around the trunk. These guards should be loose-fitting, extend below the ground about four inches, and be at least two feet above the average snow depth.

There are chemical taste and odor repellents available from many lawn and garden stores. These repellents offer only a limited amount of protection and usually have to be reapplied at regular intervals, expecially following a rain storm.

Live-trapping rabbits can help control rabbit problems to a certain extent, although captured animals may soon be replaced by others moving into the area. Trapping is best done during the winter or during rainy, foggy nights in the warmer months. Traps are baited with a combination of apples, carrots, and rabbit droppings. Trapped animals should be released as soon as possible in suitable habitat at least five miles from the capture site.

Hunting is also a means of control. Check state and local regulations before shooting any animal on your property.

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The Technical Assistance Informational Series is 75 percent funded by Federal Aid to Wildlife Restoration -- the Pittman-Robertson (P-R) Program. The P-R Program provides funding through an excise tax on the sale of sporting firearms, ammunition, and archery equipment. The remaining 25 percent of the funding is matched by the Connecticut Wildlife Bureau. ■

This rabbit is looking you right in the eye; placement of the eyes gives the cottontail 360-degree vision.

For Your Information

New Director of Connecticut Council on Environmental Quality

By Leslie Lewis,
Citizens' Participation Coordinator

On January 17 of this year, Governor William A. O'Neill announced the appointment of Karl Wagener as Executive Director of the Connecticut Council on Environmental Quality (CEQ). Wagener succeeds Domenic Forcella, who resigned last fall.

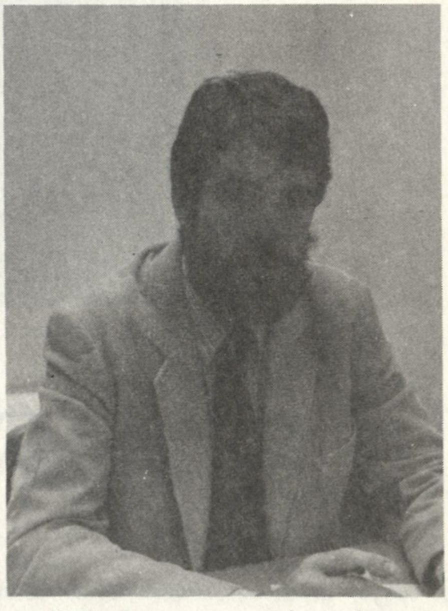
Prior to assuming his position at CEQ, Wagener served as Director of Connecticut Audubon's Environmental Center. He was involved in a number of issues ranging from developing a non-game wildlife program to air and water pollution control. In addition, he served on numerous committees and task forces and directed a substantial amount of Audubon's research on environmental problems in the state.

Wagener feels that his first goal at CEQ is to re-establish the Council's visibility. This will mean continuing the "watchdog" role of the agency with an emphasis on procedural matters. The Council will review environmental impact evaluations, or statements, on a variety of projects and help state agencies to upgrade the quality of these statements. It will also investigate cases in which citizens have complaints regarding the DEP.

Wagener stressed that CEQ will not take stands on the pros or cons of individual projects. "Our opinions may be subjective on these issues," he said. "We prefer to rate the quality of the impact statement and to make sure that all proper procedures have been followed."

Another undertaking will be the preparation of annual reports. These will concentrate on the "state of the environment" and how well Connecticut is prepared for future trends, technologies, and regulatory needs. The CEQ's Citizens' Guide to the Permit Process will also be revised to reflect current agency requirements.

The General Assembly and the governor must choose the eight members of the Council, and Wagener is "looking forward to excellent appointments." This body is designed to safeguard Connecticut's environmental protection process, and citizen support and involvement is actually encouraged. If you have any questions or problems that the Council on Environmental Quality might help you with, you can contact Karl Wagener at the State Office Building, Hartford, CT 06106, (203) 566-3510.



Leslie Lewis

Karl Wagener, Executive Director of Connecticut Council on Environmental Quality.

■

In Connecticut, few remember the devastation that a tropically-born hurricane can wreak . . .

These homes at Kelsey Point in Westbrook lie in ruin thre
coastal residents do not know exists.

A Flood-preparedness Progr

By the Staff
of the
Natural Resources Center

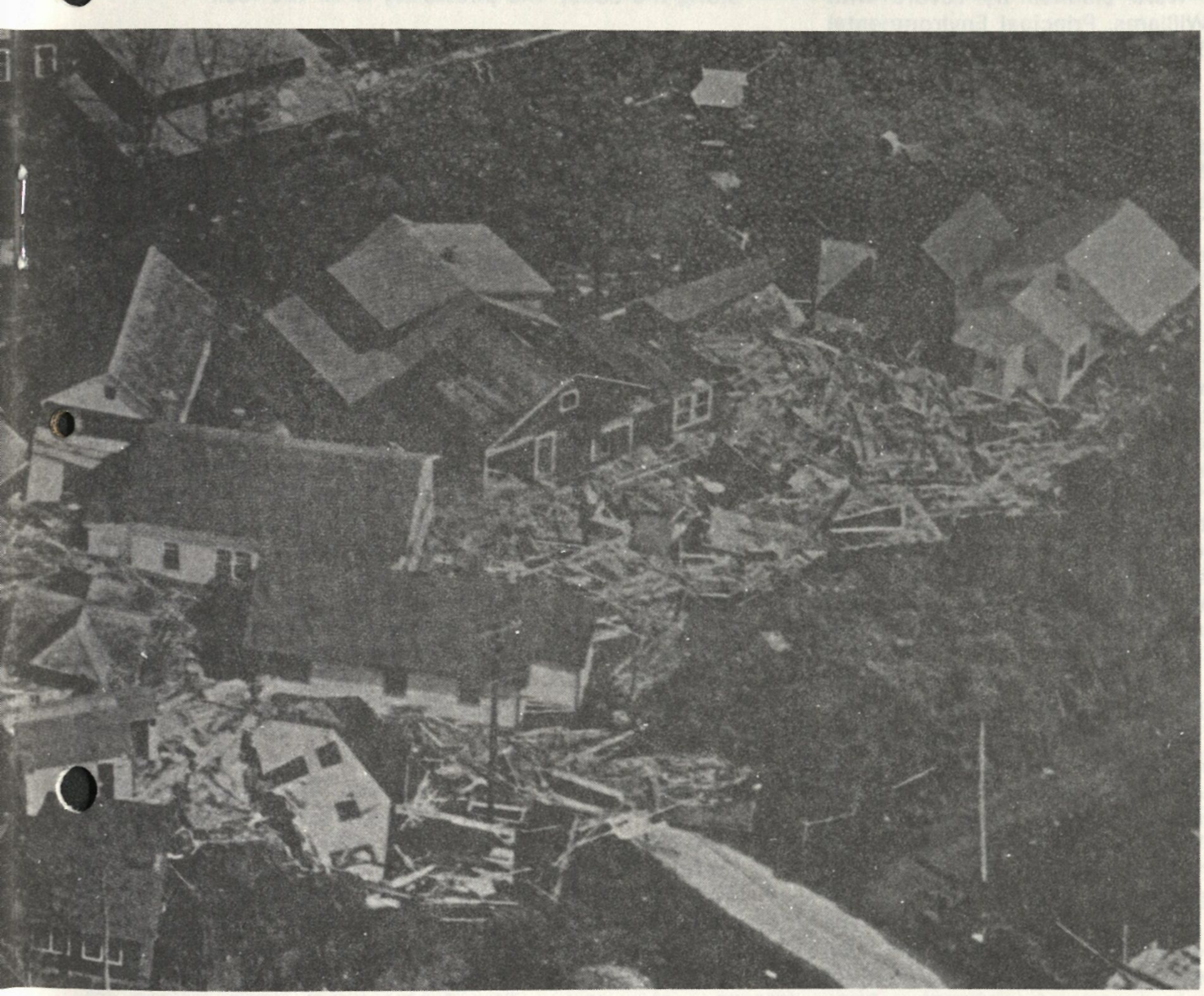
Along the Connecticut coast, and along the entire eastern seaboard, spring, late summer, and fall of every year are times of potential coastal damage from major storms.

Depending on your age, you might remember the years in which these storms occurred: 1938, 1944, 1954, and 1955. Depending on your location, you may remember the damage totals: $306 million, $100 million, $438 million, and $800 million, respectively, across New England. Hurricanes; they mean damage, they mean destruction, and, too often, they mean death.

It has been many years since Connecticut has experienced a hurricane. Certainly many coastal communities could argue that they have suffered through enough storm events to satisfy them for quite a while. The local storms of 1976, 1978, and 1984 specifically come to mind. Yet, few have seen -- it has been 30 years -- the devastation that a tropically-born hurricane can wreak.

Coastal Population Increases

The population of the state's coastal towns has increased by more than 50 percent since 193 Approximately three percent of the state's populatio -- 100,000 people -- lives in the 25 communities which are considered coastal-flood-prone areas. With the people come the houses, the industries, the businesses, and the pleasure areas. To the state, the



Natural Resources Center

e days after the Hurricane of 1938. *Storms of this intensity are a potential danger many*

ram for Coastal Homeowners

towns, and the homeowners, all of these are assets. If a storm hits they all become potential liabilities.

A recent inventory conducted by the Natural Resources Center (NRC) of the Department of Environmental Protection (DEP) revealed a total of 35,000 structures in flood-prone areas along the Connecticut coast. Of these, 4,000 are located in high-hazard areas. Thirty-five thousand structures and nearly 100,000 people are vulnerable to a potential danger whose magnitude may not be clearly perceived.

The NRC followed up that study with a survey that indicated 50 percent of Connecticut's coastal residents have owned their homes for 10 years or less. Eighty-seven percent are new residents within the last 29 years. Thus, almost nine out of every 10 coastal residents have not been witness to a major coastal flooding event. It was decided the best way to increase awareness was through some type of educational process.

An Informational Seminar in Milford

To meet this challenge the Coastal Homeowners' Flood Preparedness Program was begun last summer. The goal was to help coastal residents reduce their own loss due to flooding damage by better informing them of precautionary and preventative measures which they could implement prior to the onset of a severe coastal flood. With that purpose in mind, Alan Levere, of the DEP NRC, presented the initial seminars in August and September of 1984.

The Cedar Beach Association in the City of Milford was the host to the first presentation after Milford was found to be the location of the largest number of coastal high-hazard structures of all Connecticut towns. The seminars were planned by Levere with assistance from Allan Williams, Principal Environmental Analyst, and Cindy Rummel, Senior Environmental Analyst.

Most of Milford's residents live there on a year-round basis and are generally aware of the potential brutality of Connecticut weather in all seasons. The city has been flooded several times in the past, all of which might have made it seem that residents were not only aware of flooding, but had taken precautions against it; in fact, some had. During the research and preparation for the seminar, it became apparent that some of the homeowners of Milford were better prepared than anticipated. One resident had experienced floods severe enough to warrant evacuation at least five times in as many years. Others had taken the precaution of suspending sensitive equipment in their basements (furnace, hot water heater, electrical panel, and gas meter) above the flood level. One woman made use of flood panels to cover her home's windows against strong winds an blowing sand. Most residents, however, had taken no precautions and, for the most part, did not realize the extent of damage that could occur from a tropical storm or hurricane.

The first phase of the instructional program was to arrange for the use of a volunteer's home as an example to show the actual flood elevations. Once the home was selected, flood elevations were transferred onto its exterior and into its interior. Levere explained that for analytical and insurance purposes, base flood elevations have been established for all the coastal communities. The base flood has a one percent chance of befalling a flood-prone community in any given year. It is also referred to as "the 100 year flood." Levere continued to explain that no matter what number rating may be applied to any storm, there is no guarantee that a "one hundred year" event will not occur twice next month. Different flood zones have been delineated by the federal government's flood insurance rate maps. The maps show the elevation of still water areas and other areas that will potentially be battered by storm wave action.

At the first seminar, the example home was found to have been elevated somewhat during its construction. The fact that it had was an advantage to the homeowner because damage would not be increased by the still water level of the base flood. But, since the house was located in a wave velocity zone, the actual storm water elevation raised by wind and waves was increased to a height of three feet, 11 inches, an additional two feet, 10 inches above the still water height. Thus, even though the house had been elevated somewhat, the entire first floor would still be under approximately 14 inches of oscillating sea water.

By contrast, a house that had not been elevated would receive not 14 inches on the first floor level, but in fact more than three and a half feet of water on that floor. The difference is the extra one and a half feet the first house was elevated when it was built. It is difficult to conceive of three and a half feet, or even one foot, of water in your kitchen, dining room or living room, but for anyone in a flood hazard area along the coast, the possibility is all too real.

The seminar further includes a slide sequence depicting a New England town devastated by a hurricane in 1978. The sequence shows quite graphically the difference between relatively minor storms that many coastal residents had experienced and considered "flooding," and the damage that a true coastal storm can do by comparison. There may seem to be insurmountable odds in battling the ocean, but there are ways to decrease the chance of loss.

The major feature of the preparedness program, and of the seminar, is the Coastal Homeowners' Flood Preparedness Manual. The manual, a 70-page document compiled by Levere specifically for this project, outlines and explains the many different floodproofing techniques. It takes the reader through chapters titled "Opinions and Techniques for Reducing Flood Damages," "Cleanup and Repair," "Tips on Restoring Flood Damaged Property," and "Planning Against Future Floods." There are special sections regarding "Tips for Boat-owners" and "An Introduction to the National Flood Insurance Program." The final chapter, "Floodproofing Cost-Benefit Analysis," helps the reader to understand whether the cost of floodproofing is actually worth the expense.

The majority of the manual discusses the three primary types of floodproofing: permanent, contingent/standby, and emergency measures. Permanent measures are the most extensive and the most thorough. They include raising all utilities above flood level, elevating the home above flood level, or, if the flood problem is severe, relocating the structure outside of the flood zone. With the use of permanent measures, flood insurance premiums can either be greatly reduced or eliminated.

Contingent/standby measures are those that involve implementation immediately prior to flooding. They include the use of flood shields bolted over windows and doors, as well as check-valves in the sewer line to nullify the chance of raw sewage backup. The manual describes and lists both the advantages and the disadvantages of wet floodproofing -- keeping damages to a minimum by allowing water into the house, and of dry floodproofing -- taking the necessary precautions to keep all floodwater out of the house.

Emergency measures, which include sandbagging, moving valuables to higher and drier elevations within the home, and evacuation are also discussed in detail.

Esssentially, the manual contains some floodproofing methodology that can apply to every situation. All of the chapters are potentially beneficial and at some point in the text almost everyone's flood questions may be answered.

For information on this program call or write Alan Levere at the DEP's Natural Resources Center, Room 553, 165 Capitol Avenue, Hartford, CT 06106 (566-3540). ■

Sen. Weicker Urges Commitment to the Oceans

By Diane Giampa,
Sr. Environmental Analyst

Connecticut's Senator Lowell Weicker, Jr., has long been a strong supporter of ocean and coastal programs. This past December, he was the keynote speaker at the annual meeting of the Coastal States Organization, held in Boston, Massachusetts. His remarks, excerpted below, are particularly pertinent in light of the administration's recent 1986 budget proposal in which President Reagan, for the fifth straight year, is asking Congress to eliminate federal funds for coastal zone management and other marine and freshwater resource programs. Senator Weicker's remarks were as follows:

Thank you for the opportunity to address this 14th annual meeting of the Coastal States Organization. It is a pleasure to be surrounded by people, such as yourselves, who share a commitment to our oceans and coasts. In Washington, it is not always so.

True, the president did stake our claim to the 200 miles off our coasts as the Exclusive Economic Zone of the United States. In so doing, he more than doubled the portion of this planet under our control. But the question comes: Are we doing all we can to be responsible stewards of these resources? Unfortunately, the answer must be a resounding "no."

Other nations have moved aggressively to understand and use their expanded economic zones. Ours has not. It has failed to support the research needed to adequately assess these resources.

It has failed to support the management programs needed to protect them against over-development and degradation. And it has failed to recognize the partnership role Congress intended the states to play in decisions affecting their future. There is no point to proclaiming 1984 the "Year of the Oceans" unless that proclamation is going to be backed up with a federal commitment to an informed and enlightened oceans policy and to a viable oceans agency. Actions speak louder than words and on this score the Administration's silence is deafening.

If you examine the trends in federal support for research, you will find increases in nearly all fields except oceanography. Each year now, for five years in a row, the Administration has requested deep cuts in coastal and oceans programs. Of the agencies targeted for budget cutbacks, NOAA (National Oceanic and Atmospheric Administration) has been favored. Each year, the budget requests have come up to the Hill in very round figures. For the Undersea Research Program, zero dollars. For the Sea Grant Program, zero dollars. For the Coastal Zone Management Program, zero dollars. And each year, Congress has put money back into these budgets. I have been proud to play a part in the salvaging of these important programs. Still, since 1980, funding for federal oceans programs has declined by nearly 40 percent. When inflation is taken into consideration, NOAA has lost $100 million dollars over four years.

We all recognize the need to reduce the federal budget, but the fact is these oceans programs have carried more than their share of the burden. NOAA's is not a big budget but a most important one. As our land-based resources are stretched thin, we will look more and more to the oceans -- for food, for energy, and for many other uses that today we cannot even imagine.

Those of us who are committed to sound ocean and coastal policies -- and, in particular, organizations like your own -- must continue to carry the ball. In the 99th Congress, we must sharpen our defense and begin to play offense again as well. There will be opportunities to make the case. New administrators will be nominated this year. New budget requests will make their way to the Hill. It will be up to us to make clear that dollars spent for research and management of the coasts and oceans are dollars invested in our future. And that dollars not spent mean depleted resources, missed opportunities, continued conflicts, and big costs. We must talk in terms this Administration understands -- "dollars," "benefits," and "costs" -- if we expect to be heard.

There is reason to hope for better treatment of these programs in this Administration's second term. Just last week I met with Commerce Secretary Baldridge and was pleasantly surprised by his positive attitude toward the Undersea Research Program. I have worked for several years to upgrade the facilities available to ocean researchers, such as submersibles and underwater habitats. Now it appears as though there are people in high places, namely the Cabinet, who are willing to go to bat for this program, and that is certainly a step in the right direction.

More people, more members of Congress, can be brought around to our point of view if we persist in our efforts to put the oceans and coasts at the top of the agenda. Not a single one of my colleagues should go unlobbied for, if as a nation we reaffirm the federal commitment to the oceans, all the states of this union -- and not just the coastal ones -- stand to benefit. ■

1984 Connecticut River Salmon Run

Salmon smolts in a small brook in the Salmon River watershed. Within a week the fish departed for the ocean.

Text and Photos
by
Stephen Gephard
Fisheries Biologist, Marine Fisheries

Atlantic salmon have perplexed and amazed naturalists for centuries. Early naturalists classified the young salmon parr living in freshwater streams as a different species from the much larger adults re-entering the rivers from saltwater. Once it was discovered that the young salmon migrate seaward to spend their adult years in the ocean, biologists extensively studied the fish's freshwater life-phase. However, relatively little is known about the salmon's life in the ocean.

This discussion of the mysteries of the Atlantic salmon is relevant to a summary of our 1984 Connecticut River salmon run because somewhere in the unknown marine phase of the species lies the reason for decreased salmon runs in our state. All adult salmon that return to the Connecticut River and its tributaries are survivors of the group of juvenile salmon stocked into the watershed two years earlier. The fish are raised and released into the states of Connecticut, Massachusetts, Vermont, and New Hampshire which, along with the federal government, are participants in the 19-year-old Connecticut River Atlantic Salmon Restoration Program. Since biologists know how many juvenile salmon (called "smolts") are stocked each year and they also capture or account for nearly all of the adult salmon that return to the river each year, return rates can be calculated.

Due to excessive natural mortality, salmon return rates in wild, healthy salmon rivers are low, usually less than five percent. However, in rivers such as the Connecticut where the native strain of salmon is extinct and non-native strains are being stocked in order to restore a population, return rates are generally less than one percent. In the Connecticut River program some strains (e.g., Penobscot River, Maine) return at a higher rate than others (e.g., Miramichi River, New Brunswick). Over the years, biologists have kept track of the return rates for various strains of salmon used in the program and therefore are able to provide a rough estimate of the number of salmon that might be expected to return in a given year. Based on the 1982 smolt stocking, approximately 500 adult fish were expected in 1984. However, only 92 fish returned, amounting to a return rate approximately 10 times lower than normal. Despite the disappointments, the run for 1984 was the third largest in the program's history.

Those who read the salmon summary in the Citizens' Bulletin last year remember that the downturn in salmon returns in 1984 was predicted. The unfavorable ocean conditions in the North Atlantic apparently began in 1983 and the high-seas commercial salmon fisherman did very poorly. Since the fishing involved here was for the salmon that were maturing and preparing to return to their home rivers, the implication was that there were not many of these fish and that the 1984 runs would be low. That is exactly what happened.

The bad news is that the 1984 commercial fishe did even worse than the 1983 fishery, implying that th 1985 runs may also be dismal. However, there is much about salmon biology that is not known and we will not know what will happen until the fish start coming in, usually around mid-May.

> We can expect large runs by the late 1980s, and near complete restoration by the turn of the century.

The exact cause of the decline of salmon at sea cannot be fully explained. Most biologists and conservationists agree that the species is being overfished at sea but the evidence indicates that there is more to the problem besides overfishing. Many straits have been abnormally cold, which hurts the species of fish that the salmon feed on. It has been speculated that the "El Nino" phenomenon, an unusual water current in the equatorial Pacific Ocean, may have triggered the climatic shift. It has been known to affect climate all over the globe whenever it appears, usually once every seven years.

The low adult returns during the past year were disappointing, but there is reason to be reassured about the future. Biologists with the restoration program have been attempting to re-establish a population of Atlantic salmon that is capable of eventually reproducing in the wild, supporting a sport fishery, and developing juvenile and adult migrations just like other salmon rivers' populations. When the conditions in the ocean improve, the runs of salmon into Connecticut will increase along with those in other parts of the world.

The Flood of 1984

Many newspaper accounts of the salmon run of 1984 indicated that the flood was a factor in the poor salmon returns. Heavy rains during the end of May caused serious flooding of the tributary streams and the third-highest flood recorded for the Connecticut River from May 31 to June 5. There is no reason to believe that the flood reduced the number of salmon. Salmon have co-existed with river floods for thousands of years and have evolved patterns of behavior to avoid harm.

Most active migration of salmon ceases during the eak of flooding and this pattern is confirmed by the 984 data.

Another aspect of the flood may have been to prompt straying of homing salmon. Based on tags that some of the salmon were carrying, it is known that at least two salmon released as smolts from the Rainbow fishway were captured as adults at the Holyoke fishlift.

Record Number of Salmon Eggs

Although the number of salmon that returned from the sea was low, the numbers of eggs obtained during the annual spawning operations was very high, a record for egg production within the state of Connecticut. Biologists have not developed secret techniques of "getting blood from a stone." Rather, other sources of salmon eggs besides the returning adults have been developed.

One source is from "kelts," sea-run fish that have spawned in previous years.

Another source is "domestic broodstock." These are fish that are never released into the wild. They are kept in hatcheries from fry right to the adult stage. Hundreds of domestic fish originating from Connecticut River returns were reared for five years and produced 735,994 eggs in 1984.

A total of 28,917 eggs was produced by these salmon in 1984 which came up the river, were captured and which spawned. These were the so-called "bright sea-runs."

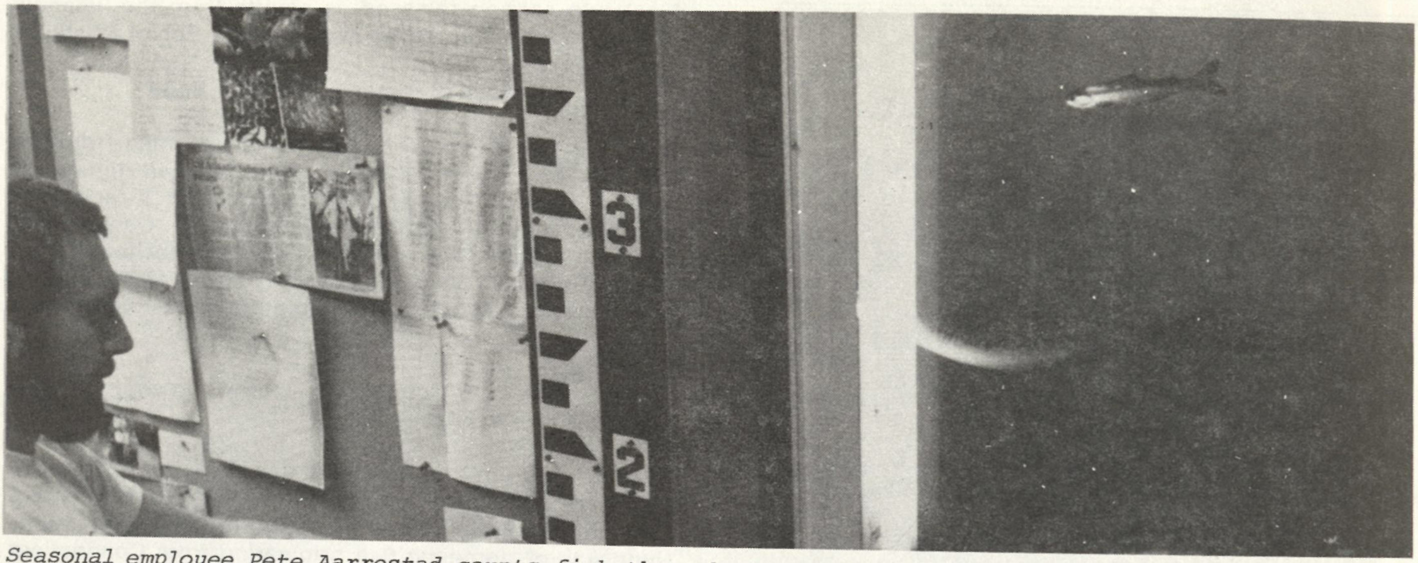
It is the objective of biologist Rick VanNostrand and his staff at Barkhamsted to maximize the number of "pure sea-run salmon" eggs during the fall spawning operations. That means that they try to fertilize all the eggs from bright sea-run females with the molt from the bright sea-run males or male Connecticut River kelts. Since these groups of fish successfully returned to the Connecticut River, it is known that their genetic identity possesses "the right stuff."

These miscellaneous eggs, added to the total of pure sea-run eggs, kelt eggs, and domestic eggs provide a total 1984 egg-take for the state of Connecticut of 875,208. These eggs began hatching in January and will be reared at Kensington during 1985 with a scheduled stocking as smolts, ready to migrate to sea during the spring of 1986. Surviving adults would be expected to return in 1988.

In addition to those eggs taken in the state of Connecticut, 930,414 eggs were taken from a similar variety of sources from federal facilities in the state of Massachusetts. This adds up to a total of 1,805,622 eggs for the Connecticut River program.

Changes in Fishing Regulations

The Bureau of Fisheries held two public hearings early in the year to solicit public input into the formulation of regulations for the eventual sport fishery for Atlantic salmon in the tributary waters of Connecticut. On June 11, 1984, DEP Commissioner Stanley Pac closed the Atlantic salmon sport fishery until December 31, 1984, in order to protect the few returning adults. New regulations implemented for 1985 provide that the sport fishery for Atlantic salmon will remain closed until the DEP commissioner opens it. With such a



Seasonal employee Pete Aarrestad counts fish through the observation window at the Rainbow Dam Fishway. The top fish in the window is a wild salmon smolt migrating to the ocean from Sandy Brook, a headwater tributary of the Farmington River, where the fish was stocked as a tiny fry two years earlier.

system, the commissioner may open the fishery in the spring only after DEP biologists capture enough returning salmon for broodstock and some additional fish are released to provide natural reproduction. Because the 1985 salmon run is expected to be low, it is unlikely that the commissioner will open the fishery this year. The regulation states that any salmon taken in Connecticut waters must be returned "without avoidable injury."

Another regulation change will protect the juvenile salmon from anglers. In the past, anglers were required to be able to distinguish between small trout (which they could keep) and salmon smolts (which they could not). Because of confusion over the proper identification of the fish, some salmon were kept. A new system will be initiated in 1985: All salmonids (members of the family that includes salmon, trout, and charr) that are less than nine inches long and caught in the Connecticut, Farmington, Salmon, Blackledge, and Jeremy Rivers and selected tributaries, must be released, regardless of species. Those are the streams in which salmon smolts are stocked and in which the smolts are rarely over nine inches in length. All rainbow, brown, and brook trout stocked in these streams will be over nine inches long. Therefore, if you are fishing in the Salmon River this spring and catch an eight-inch fish that you think is a brown trout, you must release it. It will probably be a salmon parr, but even if it is a brown trout, you must release it.

The Connecticut DEP has jurisdiction in salmon regulatory matters only in the tributary waters (Farmington and Salmon River watersheds). Interstate agreements and state statutes have vested the authority to regulate and manage the salmon run on the mainstem Connecticut River with the Connecticut River Atlantic Salmon Commission (CRASC), made up of professional and lay representatives from each Connecticut River state and from the federal government. As of this writing, CRASC is planning hearings on harvest regulations for the mainstem of the river and is expected to close the salmon fishery on the river until further notice.

The Future Looks Bright

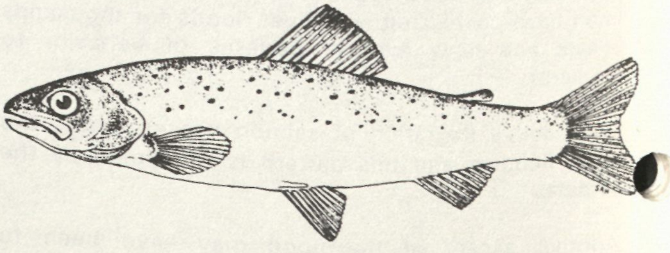
In some sense, salmon enthusiasts must feel like Boston Red Sox fans (". . . wait 'till next year"), yet when one considers the tremendous progress made in less than 20 years there are reasons for celebration. The salmon run in 1984 was disappointingly low and there is a good chance that the 1985 run will also be low. However, three factors will probably combine to produce large runs in the late 1980s, and near complete restoration by the turn of the century:

1) skillful husbandry of existing stocks, good resource management, and preparation by Connecticut River state agencies;

2) natural, ecological changes that will eliminate the poor sea-survival experienced in recent years;

3) and conservation measures of high-seas salmon stocks instituted by North Atlantic Salmon Convention Organization (NASCO).

When all that happens, the patience, interest, and support of Connecticut citizens will pay dividends in wild salmon runs.



Salmo salar Linnaeus,
Atlantic salmon

■

The Connecticut Environmental Caucus

A common concern for the environment

By Este Stifel,
Environmental Intern

The Connecticut Environmental Caucus is a unique, private organization that functions as an information pool on new developments, legislation, and matters of environmental concern.

Among its membership are representatives from most of the major environmental organizations, as well as interested individuals. The Caucus meets once a month in the Connecticut Audubon's Hartford office, 118 Oak Street. The members use the meetings as an information exchange. In general, the Caucus establishes general issue stands, such as their stands on clean air and farm land preservation. However, they do not seek a political identity. The Caucus members have varied ideological backgrounds; the success of the organization has occurred primarily because of efforts not to become a political weapon.

The Caucus is significant in that very few states have such a network of actively communicating environmental groups. The meetings and monthly newsletters serve to keep each member aware of bills, actions, and decisions which otherwise might go unnoticed.

The monthly meetings follow a standard pattern. At a recent meeting, Chairperson Suzanne Langille made the opening remarks. Then she announced upcoming events that might interest the members. One event will be presented by the Army Corps of Engineers and another will be on Chimon Island. Then Ms. Langille opened the floor to any members who had announcements to make. One member asked those present to write their legislators about a controversial issue involving the Department of Transportation.

The main program follows the announcements. Usually there are two to three guest speakers at a meeting. The topics include a wide range of interests from aquaculture to natural history museums to hazardous waste management.

The members often bring success stories to the meetings. Recently a member of the Nature Conservancy spoke on the acquisition of Chimon Island National Wildlife Refuge. This island is an important nesting ground and stopover point for migratory birds. The Nature Conservancy made a successful bid for the land, ensuring that it would never be developed. The National Audubon Society was instrumental in changing the basic wording of the act that allowed the purchase to go through. Audubon's influence caused the act to become broader in its implications in that it now protects more land and draws a larger constituency for funding and maintaining wildlife resources. It is possible that without the transfer of information at the Caucus meetings, the double benefit of this one action may never have occured.

The monthly newsletter contains information about the procedings of the previous month's meeting. It also contains notices, job opportunities, book reviews, and short articles concerned with environmental problems. The articles are varied and very informative. A recent article titled "EPA inches toward lead ban" discussed the EPA's slow movement toward stronger bans on lead in gas. It also informed the reader that nearly 25 percent of American drivers illegally deactivate their catalytic converters, thereby saving pennies at the pump by using leaded gas. This damage to the air occurs even though it has been clearly documented that it actually costs these people 19 cents a gallon more due to reduced engine efficiency.

The Connecticut Environmental Caucus is an organization with a wide range of interests -- the common denominator being a concern for the environment, both now and for the future. An organization such as this needs an active membership to ensure success. It is open to everyone who lives in Connecticut. If you wish further information about the Caucus, meeting times or membership, please contact Chairperson Suzanne Langille at the Connecticut Fund for the Environment, 152 Temple Street, New Haven, CT 06506, phone 787-0646, or write the Caucus directly at 118 Oak Street, Hartford, CT 06106. ■

The Bulletin Board

Northeast Utilities Shares Land with DEP

By Este Stifel
Environmental Intern

The Wildlife Bureau of Connecticut's Department of Environmental Protection has been working hard on a new project to get more privately-owned land opened to the public for controlled wildlife-based recreational use. These new aquisitions are called "Cooperative Wildlife Management Areas." Private landowners who agree to become a part of this program lose no ownership rights. They allow the Wildlife Bureau to stock their land with pheasant; the Bureau also strictly controls hunter usage of the land. Therefore, there is no over-hunting or abuse of these areas.

COOPERATIVE WILDLIFE
NU
PROPERTY
MANAGEMENT AREA

Most of the land in these areas at present is owned by individuals. However, one corporation, Northeast Utilities (N.U.), has made an important set of agreements with the Wildlife Bureau. In June of 1982, under the first agreement, a 180-acre tract was placed within the control of the Cooperative Wildlife Management Area Program. This tract abutted an already-existing state-owned Wildlife Management Area in East Granby, thereby making a continuous area of over 600 acres accessible to sportsmen. Since this time, N.U. has made two more tracts available, the N.U. Maromas Hunting Area of 950 acres and the Skiff Mountain tract of 710 acres. N.U.'s close association with the Wildlife Bureau has been a major breakthrough in communication and relations with large corporate landowners. N.U. has paved the way for future recreational opportunities in the state. Of course, the future of these areas is dependent upon the user's treatment of the areas. ■

Family Outdoor Discovery Program

April 14, Sunday 2:00 p.m.

Fishing and Aquatic Insects
Goodwin State Forest
Hampton, CT

What kinds of insects do fish eat? Where do fish live within their stream, river, or lake environment? What are some methods and techniques we can use to "trick" them to bite? These are some of the questions that will be explored in this program. Through the use of a "water slide" projector and live specimens, participants will learn firsthand about the strange and wonderful world of aquatic insects and their larger co-inhabitants, fish. Artificial flies, baits, and techniques in using them will also be discussed.

April 28, Sunday 10:00 a.m.

The Connecticut Trap Rock Ridges
Higby Mountain
Meriden, CT

Connecticut's trap rock ridges are delicate habitats housing many different environments. This program will investigate this unique ecosystem and include a two-mile hike to the top of Higby Mountain. Bring a lunch and water. A camera and good footwear are also recommended.

May 25, Saturday 1:00 p.m.

Coastal and Marinelife Ecology Walk
Rocky Neck State Park
East Lyme, CT

Join DEP education staff for a guided walk along scenic Long Island Sound. Facts of natural and historical interest including glaciation and estuary development will be discussed. The program will also introduce the public to plant and animal life in and around a rocky coast.

The group will be gathering at the East Bath House.

June 8-9, Saturday - Sunday

Outdoor Discovery Weekend
Channel 3 Country Camp
Andover, CT

This will be a two-day, overnight experience conducted by staff from the DEP and other educators/naturalists from all over Connecticut. This year, our first weekend experience will be held at the Channel 3 Country Camp in Andover. Participants will be provided all meals for the weekend, lodging and a choice of workshops, presentations and programs designed for both children and adults.

The 250 acre site provides a beautiful setting for a variety of activities from stream and river studies to forestry and wildlife observaitons. Rustic accommodations will be provided and meals will be served in a new multi-purpose building. One of the best trout streams in the state runs through the property. In short, we feel this weekend experience will be well worth while.

Further information and a registration package will be available in April. To register in April, call or write to our office. A registration package will then be sent. No reservations will be accepted prior to April.

Cost for the weekend:
$21/adult
$18/children

For further information on any of the above programs, phone: 566-8108. ■

Wildlife Conference

Professor Stephen Kellert of the Yale School of Forestry and Environmental Studies will deliver the keynote address at the 41st annual Northeast Fish and Wildlife Conference at the Sheraton Hotel on Monday, May 6, 1985, according to Robert Jones, Director of the Fisheries Bureau, Department of Environmental Protection (DEP) and chairman of the conference committee.

"Professor Kellert has gained a widespread reputation for his research on and knowledge of public attitudes toward wildlife," Jones said. "His remarks should be ideally suited to this year's conference theme, 'Conflict and Communications in Resource Management.'"

A five-member panel will discuss the theme and address Professor Kellert's remarks as part of the opening session of the conference. The panel members are: Nelson Bryant, outdoor writer with the New York Times; Dr. John Grandy, Vice President of the Humane Society of the United States; Senator George Gunther of Stratford, Connecticut General Assembly; and Gilbert Radonski, Executive Vice President of the Sport Fishing Institute. Inez Connor, Public Affairs Officer with the U.S. Fish and Wildlife Service, Newton Corner, Massachusetts, will serve as panel moderator.

The Northeast Fish and Wildlife Conference provides an opportunity for representatives of 20 jurisdictions, including U.S. states, Canadian provinces and the District of Columbia to share up-to-date information on fish and wildlife management and related activities. The participating organizations include the Northeast Association of Fish and Wildlife Resources Agencies, the Northeastern Division of the American Fisheries Society, the Northeast Section of the Wildlife Society, Conservation Law Enforcement Chiefs Association, the Northeast Society of Conservation Engineers, and the Northeast Conservation Information and Education Association.

In addition to exchanges among representatives of the various participating organizations, the conference will include a student program which will provide opportunities for interested students to attend formal presentations and discuss career possibilities with professionals in the resource management field. ■

Martha Kelly

DEP Commissioner Stanley Pac signs Quit Claim Deed to transfer back to tribal ownership 20 acres of land containing the ancient Pequot burial grounds. Looking on are (left to right): Thomas Tureen, attorney to the Mashantucket Pequots; Loretta Libby and Theresa Haywood, sister and mother of the Mashantucket Pequot Tribal Chairman; Governor O'Neill; Richard Haywood, Mashantucket Pequot Tribal Chairman; José Ramirez, Deputy Legal Counsel to Governor O'Neill; Edward Sarabia, Indian Affairs Co-ordinator.

Upcoming Events at Goodwin State Forest

April 20 Saturday -- 9:30 a.m. to 4:40 p.m.

How to teach forest conservation by doing -- actual practice in ways to control erosion, improve wildlife habitat, clear trails, etc. Rain or shine. Conducted by Huber Hurlock, district Forester. No charge, but pre-registration required by April 8. Call the Goodwin Conservation Center at 455-9534.

April 27 Saturday -- 2 p.m.

Types of trees to suit your needs, how to choose and plant them, how to keep them healthy. Co-sponsored at the Conservation Center by Ladd's Nursery. No charge.

April 28 Sunday -- 1 p.m.

A free lesson in simple whittling techniques with Bill Gaunya, songbird expert. At the Conservation Center Meeting Room. Pre-registration required by calling the Goodwin Conservation Center at 455-9534. Deadline: Wednesday, April 25.

The May - August program schedule for the Conservation Center is available by sending a self-addressed, stamped, business-size envelope care of the Goodwin Conservation Center, RR 1, Box 100, North Windham, CT 06256.

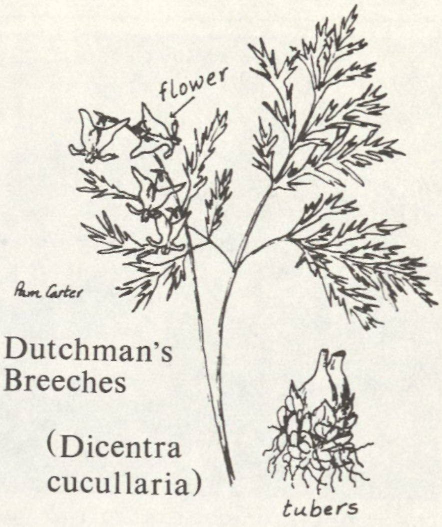
For more information, contact Lois Kelley, Director, 455-9534. ■

Trailside Botanizer

By G. Winston Carter

Sometime between the middle of April and the middle of May the flowers of Dutchman's breeches begin to bloom in rich woods and on rocky slopes. Their common name implies a resemblance to a pair of Dutchman's pantaloons. They appear as if they were hung upside down on a line to dry. The "pantaloons" are nectar pockets called spurs which have tubes that lead to them. They are formed by the two large outer petals. The two smaller, inner petals are spoon-shaped and extend outwardly, united to protect the anthers and stigma.

The outer petals with their nectar pockets attract bees, particularly bumblebees. These insects have tongues that are long enough to reach the nectar. Honeybees are also attracted to the flowers but have tongues too short to obtain the nectar. They have to settle for pollen, which is more easily available to them. Butterflies have long enough tongues but have trouble hanging onto the flowers.



Dutchman's Breeches

(Dicentra cucullaria)

The basal leaves of this dainty spring ephemeral are gray-green, finely-dissected and fern-like in appearance. It grows from a dense cluster of small white tubers which appear bulb-like. The seed is a long, or oblong, capsule which splits lengthwise when it matures.

Squirrel corn closely resembles Dutchman's breeches, but its outer petals are more heart-shaped, and its yellow tubers resemble kernels of corn. It grows in a similar habitat but usually blooms a little later. Other close relatives are wild and garden bleeding heart.

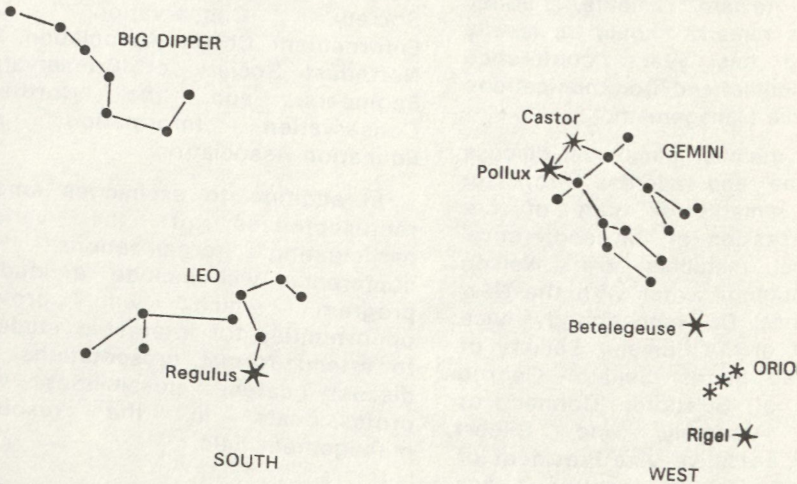
All these plants are closely related to the poppy family (Papaveraceae) and they are sometimes included in this group. Other botanists place them in the bleeding heart family (Fumarieceae). They all belong to a genus which contains a poisonous alkaloid known as cucullarine. Large amounts of this poison are found in both leaves and tubers. Cows, in early spring, may have convulsions or may even die from eating the plant. It is not poisonous to the touch. ■

The Night Sky

By Francine Jackson
Director, Gengras Planetarium

The evenings are getting warmer. Cups of hot chocolate are turning into glasses of lemonade. The winter constellations are low on the western horizon and new ones are now dominating the southern sky.

Learning these new constellations will be easier because the old winter ones can still be seen and used as guides. Orion, the Hunter, for example, is still enough above the horizon to point to Gemini, the Twins. Find the three stars in Orion's belt. Draw a line up through his eastern shoulder star, Betelgeuse, and continue up until you see two stars of about the same brightness, side by side. These are, from right to left, Castor and Pollux, the heads of Gemini, the Twins. Their bodies are fainter stars that resemble stick men standing on Orion's head.



From Pollux, look to the left until you are facing due south. There, you will see what looks like a backwards question mark, with a very bright point. This is the head and mane of Leo, the Lion. The dot is Leo's brightest star, Regulus (REG-u-lus), an easy name to remember because it is derived from the Latin word rex, meaning king. Regulus is the king star in the constellation Leo, the King of Beasts.

While looking at Leo this time of year, crane your neck all the way up, and you'll see a very familiar pattern. In springtime, the Big Dipper is at its most southerly position, seen almost directly overhead. Three stars form that familiar handle, while four stars make up the bowl. Despite what we consider a very easily recognized shape, the British see these seven stars as a plow. Whichever you see, these stars, contrary to public opinion, do not make up a constellation. They are merely a small part of a large, but rather dim, bear -- Ursa Major, the Big Bear. In a really dark sky you may be able to make out the rest of his body, but for most of us the Big Dipper, the bear's tail and "hind quarters," will be about all that the city will allow us. ■

Book Review

New England's Evolving Landscape

By
Este Stifel
Environmental Intern

Changes in the Land. Indians, Colonists, and the Ecology of New England. By William Cronon. 241 pp. New York: Hill and Wang: $7.95.

The fields and forests of the New England region are an everchanging vista. The autumn coloration of New England's hardwoods is an event that people come from all over the country to witness. We tend to assume that New England has always had this type of scenery. Changes in the Land, by William Cronon, is an ecological history of New England that explains how New England's landscape has evolved over time.

While most historical studies focus primarily on cultures and their conflicts, Cronon is more interested in the effect the different cultures had on the ecosystems. Pre-colonial Indian culture did not emphasize personal ownership of land, while the colonial Europeans, as we know, were very much concerned with who owned what. This change in economic standards had significant effects on New England's ecology. Ecosystem boundaries changed, often to be determined by property lines.

"The difference between Indians and Europeans," says Cronon, "was not that one had property and the other had none; rather, it was that they loved property differently."

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Throughout the book, Cronon quotes writers of different periods He examines comments made by English travelers, French explorers, and by Indians themselves. The Narragansett Sachem Miantonomo spoke of the necessity of intertribal unity to successfully fight the English. The concept was a new one for the Indians, so even as the Europeans brought some types of changes to New England, the Indians were adapting their lifestyles in a manner best suited to coping with the Europeans. They cultivated a more sedentary existence, adopted the use of European tools and domestic animals, and in a real sense adopted European political thought in their quest for Indian unity.

This book gives a fascinating insight into writings of the time. We understand the frustration of the Indians, for example, when they ask, "Why come the Englishman hither?" Yet, we also can understand the attitudes of the Englishmen in their writings. They came from a land where the supply of wood was so low that the situation was at a critical level. London was already suffering from air pollution due to heavy use of coal as fuel. Most Englishmen had little or no land, nor did they have the opportunity to hunt for sufficient food. These men came to New England, a virgin land with great forests and seemingly limitless amounts of game. And, just as the English could not have conceived of such abundance of resources, they were also unable to perceive that such abundance could ever come to an end. In William Cronon's book, we find a rare insight into the thinking and evolving relationship to the land which brought us to where we are today. We need this kind of insight. ■

* * *

The U.S. Army has platooned 29 goats to trim the grass around the wastewater treatment plant at Fort Dix, N.J., says International Wildlife magazine. A change of orders was no doubt welcome to the goats, previously assigned to mowing duty at a firing range. ■

A 200-year-old European fashion craze for beaver hats, starting in the 1600s, nearly wiped out North America's beaver population, which once numbered as many as 400 million, reports National Wildlife magazine. After making a slow comeback, more than two million beavers are now thought to be living in the United States. ■

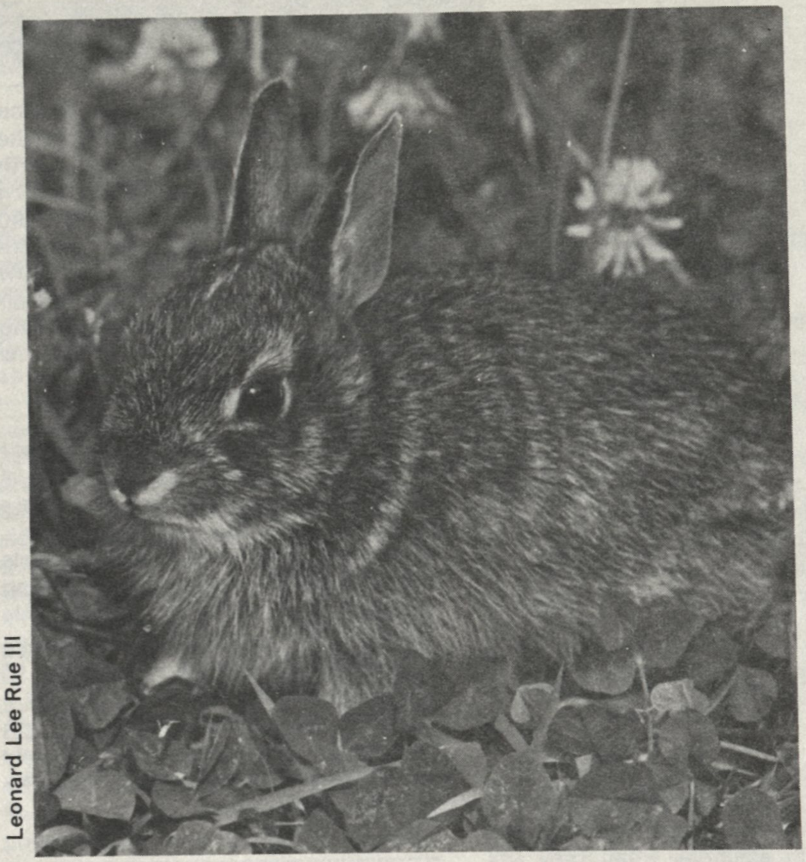
* * *

As in humans, gorillas have their own verbal idioms. Among Central Africa's mountain gorillas, there are at least 17 distinct kinds of hoots, grunts, and roars that mature animals use to express their feelings. During autumn, in order to attract his "bride-to-be," a male moose creates a "wallow" by pawing up a patch of ground, urinating in it, then pawing it up some more, says National Wildlife magazine. For reasons known only to themselves, cow moose find this behavior charming. ■

Endnote

In 1796, an Indian told the governor of Pennsylvania, "We love quiet . . . when the winds are rustled by the wind, we fear not." For after all, the wind is the voice of the Creator. Asked what it said, an old shaman of the Netsilik Inuit replied that the message was always the same: Have no fear of the Universe.

Peter Mathiessen
Indian Country
The Viking Press. 1984



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